

Rabies-related Visits to Kansas Emergency Departments in 2018

Introduction

Human rabies is a fatal, but preventable, central nervous system disease following an exposure to one of the variants of the rabies virus [1]. Between 2008-2017, no human rabies was reported in Kansas [1]. However, exposure to reservoir animals (mainly dogs, bats, and skunks) of the rabies virus is relatively common in the state, leading to numerous emergency departments (ED) visits for wound treatments and post-exposure prophylaxis. During the 2018 calendar year, Kansas EDs received 294 rabies-related visits. The following is an analysis that describes the demographic characteristics of the patients, as well as the temporal, geographic, and other characteristics of rabies visits in Kansas.

Methodology

To conduct this analysis, we queried the Centers for Disease Control and Prevention (CDC)'s National Syndromic Surveillance Program (NSSP) data using pre-defined rabies chief complaint sub-syndrome in the ESSENCE portal version 1.21. The NSSP data is used to improve nationwide situational awareness and enhance responsiveness to hazardous events and disease outbreaks[2]. On June 20, 2019, using the pre-defined query, we retrieved 294 records for the whole 2018 calendar year. This represents less than one percent of the 893,683 visits reported for the year. It is estimated that 87.0% of all Kansas ED visits were submitted to the NSSP in 2018. The data was exported to Microsoft Excel and analyzed with RStudio Version 1.2.1335 and R version 3.5.3. Each record was manually reviewed to determine: a) if the visit was related to rabies, b) which animal constituted the source of the exposure, and c) which patient's body part(s) was/were involved in the exposure. After reviewing the records, we identified 1 records, or 5.1%, that were not related at all to rabies. Those records were excluded from the rest of the analysis. Frequencies and percentages were calculated for each variable analyzed and, when appropriate, a confidence interval was calculated to determine if there were any difference in the distribution of each variable. For binomial distributions, the upper confidence limit (UCL) and lower confidence limit (LCL) of the proportions were calculated using the Clopper-Pearson method and for multinomial proportions, the Sison-Glaz method was used. One should note that this analysis is about the

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number of visits and not the number of individual patients. Patients may visit the ED several times for the same exposure.

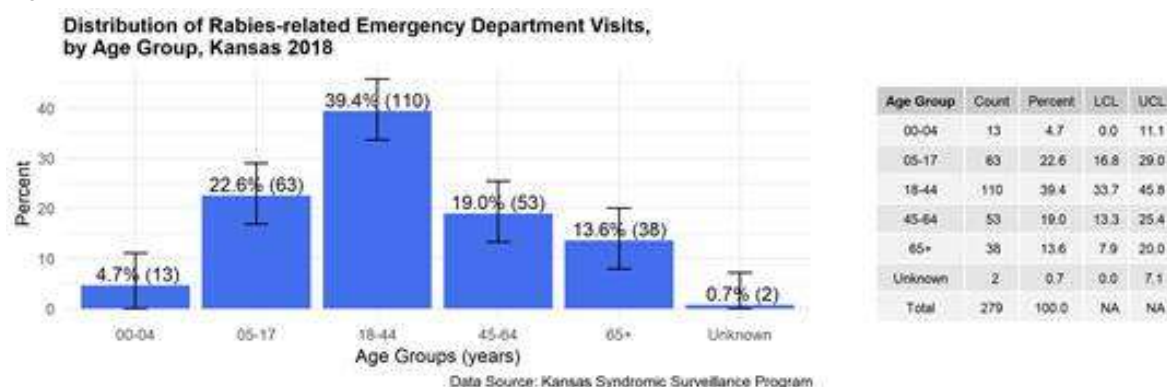
Therefore, patient characteristics may be counted more than once. Our goal was to estimate the burden of rabies-related visits on emergency departments in Kansas.

Results

Age

Based on these data, persons aged 18 to 44 years old had a significantly higher percentage of rabies-related ED visits (39.4%) than the other age groups. The age group with the second highest percentage of visits included persons aged 5 to 17 years old (22.6%). Persons older than 45 years (age groups 45-64 and 65 and over) accounted for 32.6% of all of the visits. The group with the smallest percentage of visits was children less than 4 years old (4.7%) (Figure 1).

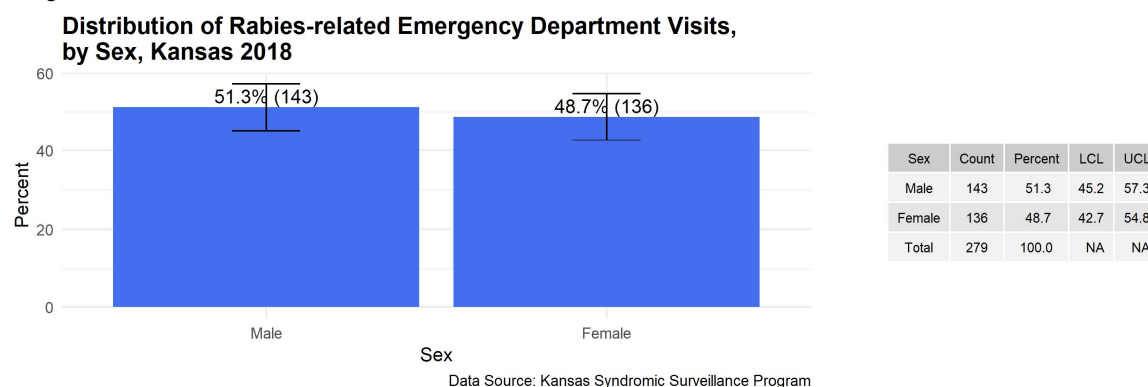
Figure 1.



Sex

When considering the sex of the patients who visited the ED for rabies-related care in 2018, it seems that both men and women are equally likely to be affected by rabies (51.3% and 48.8%, respectively) (Figure 2). The difference was not statistically significant.

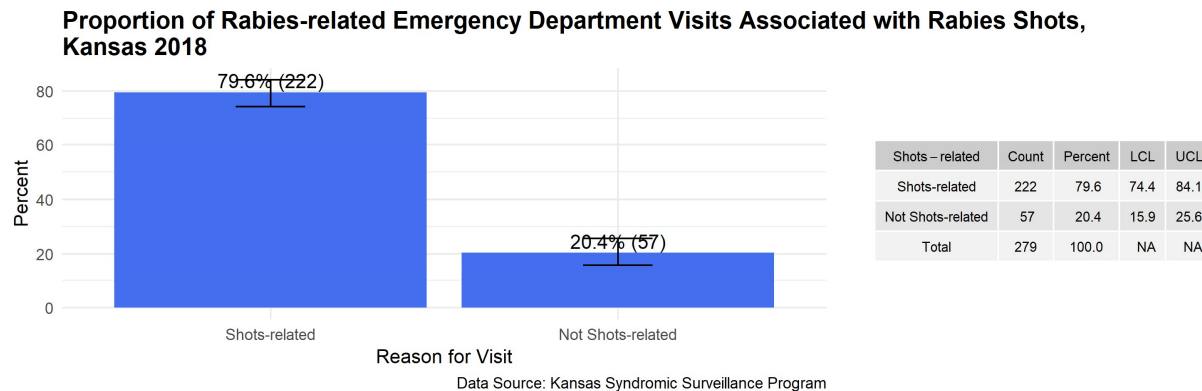
Figure 2.



Reasons for Visiting

Most of the patients were visiting the ED to either seek treatment for their injuries or obtaining vaccine shots. During 2018, according to the data (222 or 79.6%) of the visits were related to rabies shots (Figure 3). Also, many patients visiting the ED (13 or 4.7%) were referred by their primary physician.

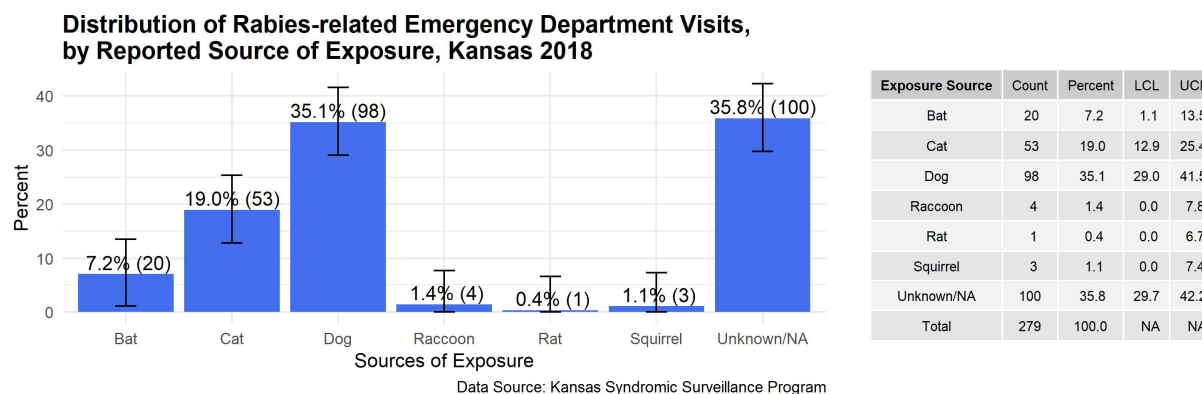
Figure 3.



Sources of Exposure

There were 179 records where an animal was identified as the source of the exposure (usually bite or scratch). Among them, more than a third (35.1%) were due to a dog bite. Encounters with a cat accounted for 19.0% of the reported exposure sources. Bats (7.2%), squirrels (1.1%), raccoons (1.4%), and rats (0.4%) represented the remaining reported sources of exposure (Figure 4). One should note that several patients sought rabies-related care after an encounter with a squirrel or a rat despite the fact that those animals are almost never found to be infected with rabies and have not been known to transmit rabies to humans [3].

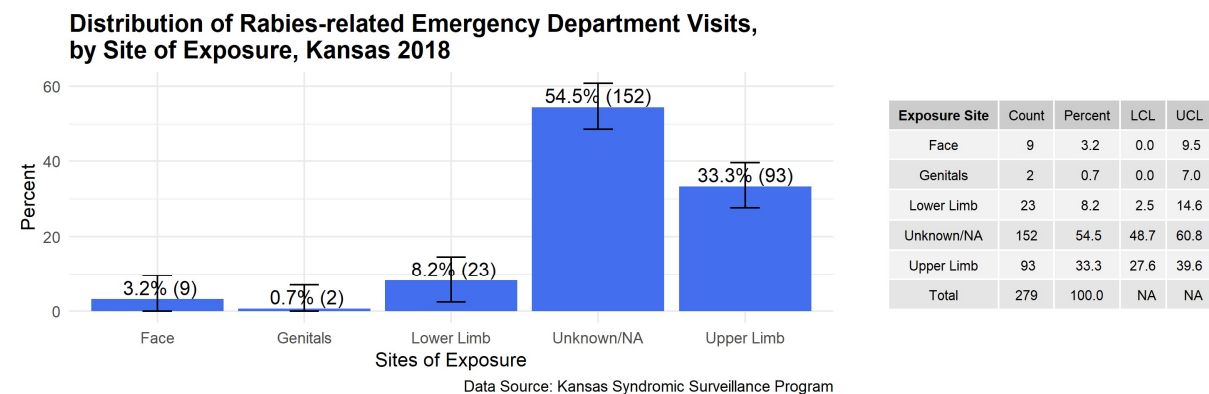
Figure 4.



Sites of Exposure

There were 283 records where a site of exposure was mentioned. As indicated above, many were bites or scratches and involved the upper limb (93 or 33.3%), lower limb (23 or 8.2%), face (11 or 3.9%), genitals (2 or 0.7%), and multiple sites (2 or 0.7%) (Figure 5).

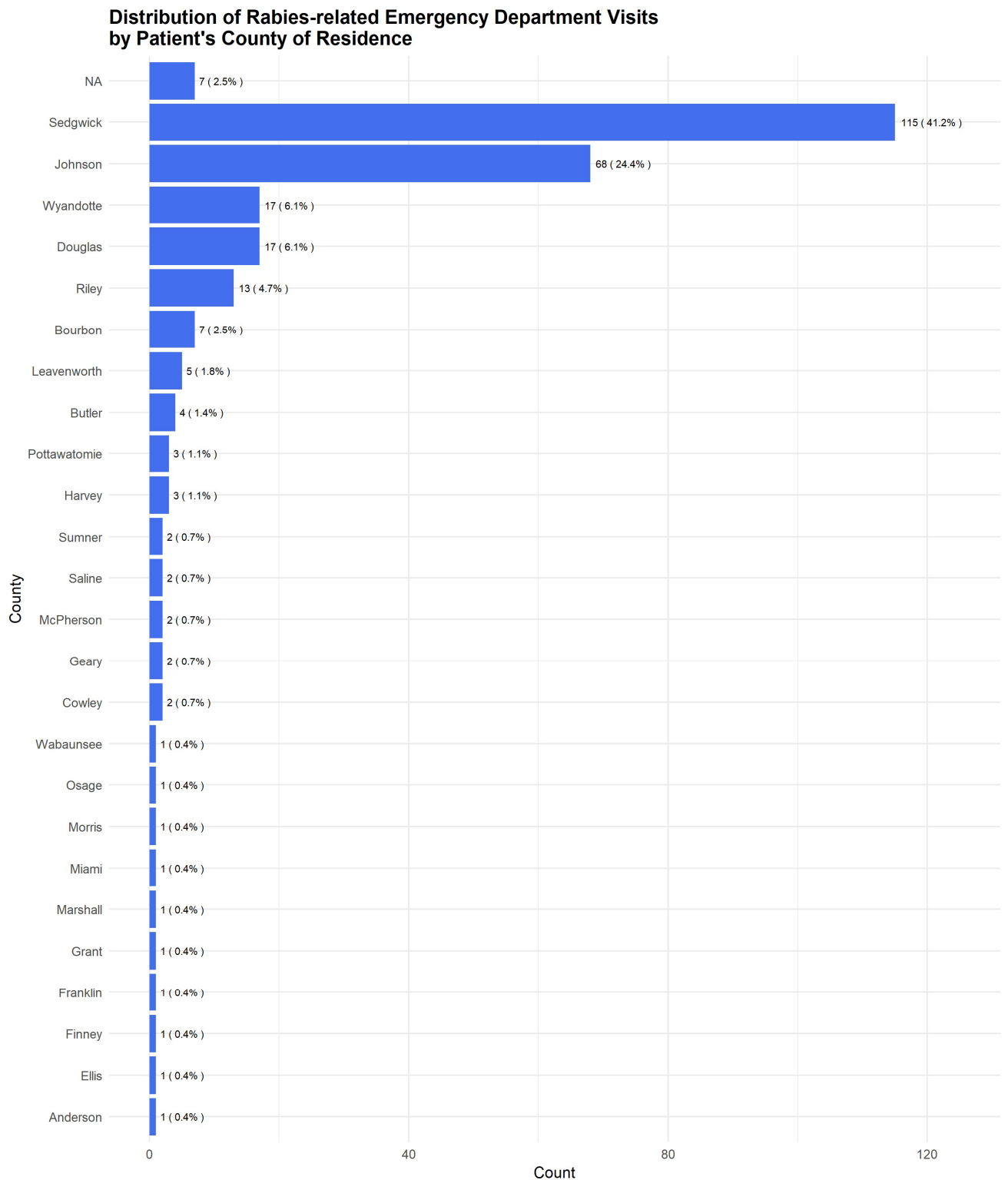
Figure 5.



Patient's County of Residence

In these data, it was not always clear where the exposure occurred. Therefore, for this analysis we are using the county of residence of the patient to estimate the burden of rabies by geographic area in Kansas. Sedgwick County is the second largest county in Kansas after Johnson county. However, in these data it is over represented. Patients residing in Sedgwick county accounted for 41.2% of all ED visits for the 2018 calendar year. The county with the second highest percentage of visits was Johnson with 24.4% of all visits (Figure 6).

Figure 6.

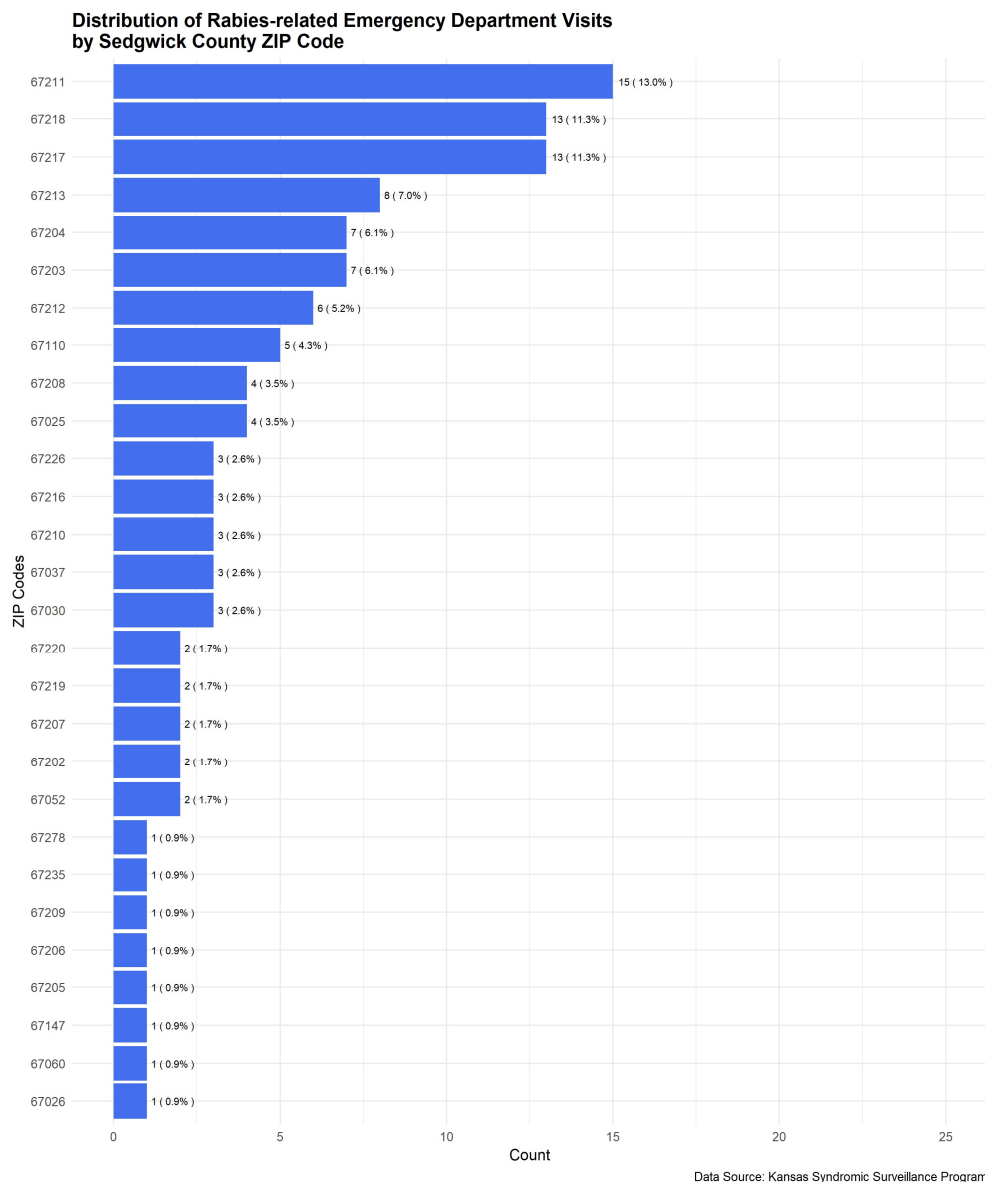


Data Source: Kansas Syndromic Surveillance Program

ZIP Codes in Sedgwick County

Given the unexpected contribution of Sedgwick county residents to the total number of rabies-related visits for the year, an exploration of the data by ZIP code was warranted. A stratification of the visits by Sedgwick county residents showed that some ZIP codes were represented at a higher rate than others. The top 4 ZIP codes were 67211 (15 visits or 13.0%), 67217 (13 visits or 11.3%), 67218 (13 visits or 11.3%), 67213 (8 visits or 6.96%) (Figure 7). A closer examination of the reasons why a greater proportion of rabies-related visits in Sedgwick county came from those 4 top ZIP codes would probably be beneficial to public health.

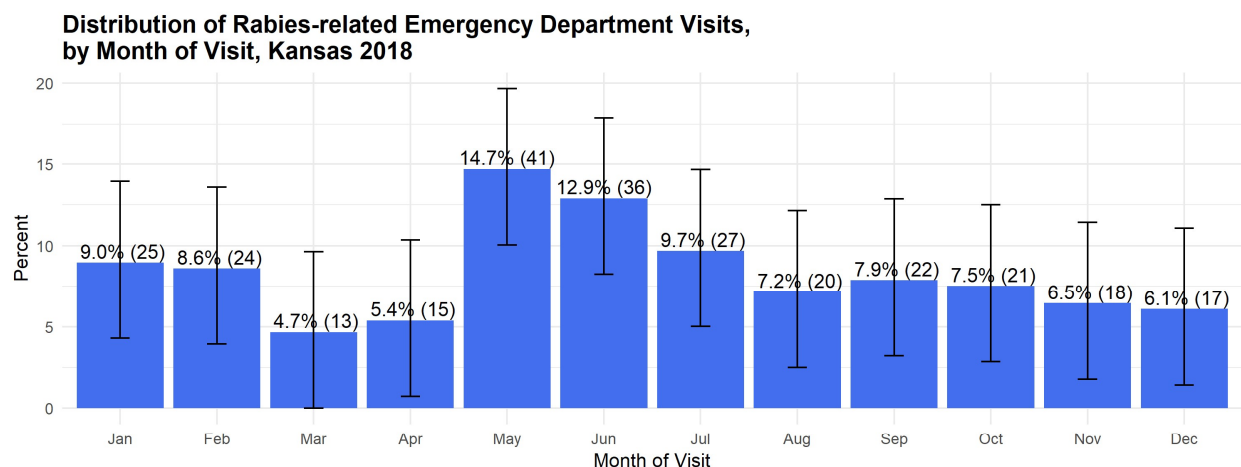
Figure 7.



Month of Visits

Based on these data, it seems that there is a seasonal trend in the for rabies-related ED visits. However, it is not clear. May and June had a greater percentage of visits while March and April had the lowest percentages. However, cooler months such as January and February registered large numbers of visits for rabies as well (Figure 8). Maybe factors other than weather may have an influence on the number of rabies-related visits in Kansas. Analysis of several years of data may provide a better picture of the trend if it exists.

Figure 8.



Data Source: Kansas Syndromic Surveillance Program

Month	Count	Percent	LCL	UCL
Jan	25	9.0	4.3	13.9
Feb	24	8.6	3.9	13.6
Mar	13	4.7	0.0	9.6
Apr	15	5.4	0.7	10.4
May	41	14.7	10.0	19.7
Jun	36	12.9	8.2	17.9
Jul	27	9.7	5.0	14.7
Aug	20	7.2	2.5	12.1
Sep	22	7.9	3.2	12.9
Oct	21	7.5	2.9	12.5
Nov	18	6.5	1.8	11.4
Dec	17	6.1	1.4	11.1
Total	279	100.0	NA	NA

Limitations

The data used for this analysis was produced by a pre-defined query from ESSENCE. To our knowledge the accuracy of the query has not been evaluated. Therefore, we cannot estimate how many records were missed by the query. In addition, we found that some large counties such as Shawnee, Lyon, and Reno were not represented at all in the data. There may be a systematic reporting issue or a coverage gap that has not been identified by this study. It is possible that specific issues such as accessibility to

vaccines and immunoglobulins may have influenced the number of visits as well. Therefore, the reader needs to exercise caution in interpreting the findings of this analysis.

Conclusion

In summary, rabies is a deadly disease if not treated in a timely manner. The proximity with wildlife and domesticated animal facilitates exposure to the rabies virus. In many cases the emergency departments constitute the main point of care for human rabies. The analysis of the syndromic surveillance data for 2018 showed men and women were equally likely to visit the ED for rabies-related care. May and June were the months with the largest number of visits while March and April had the lowest number of visits. Most of exposures were related to bites or scratches. Dog bites were the most frequently cited reason for seeking care and upper limbs were the most frequently cited as the site of exposure. In 2018, residents of Sedgwick county had the largest number of ED visits for rabies care and 42.6% of those visits were made by residents of 4 ZIP codes in the county. Despite its limitations, this analysis indicated several factors that may influence the number of ED visits for rabies-related care. Further studies are warranted.

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2018 Kansas Vital Statistics

County of Residence	Live Births	Deaths	Marriages	Marriage Dissolutions	County of Residence	Live Births	Deaths	Marriages	Marriage Dissolutions
Kansas	36,268	27,213	16,362	6,538					
Allen	159	155	63	21	Lyon	406	309	172	62
Anderson	105	98	39	177	McPherson	302	363	176	63
Atchison	185	182	92	36	Marion	112	152	67	20
Barber	55	54	28	9	Marshall	117	144	49	18
Barton	321	312	150	37	Meade	56	55	19	6
Bourbon	202	186	79	49	Miami	371	276	185	91
Brown	130	157	52	16	Mitchell	75	94	26	8
Butler	700	683	406	128	Montgomery	363	463	167	106
Chase	24	44	36	3	Morris	64	75	30	10
Chautauqua	35	55	14	10	Morton	27	38	18	5
Cherokee	232	271	64	54	Nemaha	148	139	75	11
Cheyenne	21	41	11	5	Neosho	163	225	82	27
Clark	24	26	5	2	Ness	35	43	10	5
Clay	90	110	67	14	Norton	56	58	31	11
Cloud	104	146	44	35	Osage	166	174	80	39
Coffey	73	101	52	54	Osborne	42	51	15	4
Comanche	14	27	9	3	Ottawa	63	50	23	14
Cowley	383	446	190	96	Pawnee	52	94	37	25
Crawford	451	405	202	101	Phillips	62	73	20	11
Decatur	30	45	18	6	Pottawatomie	383	177	116	42
Dickinson	183	224	97	69	Pratt	116	132	49	15
Doniphan	90	97	26	15	Rawlins	37	43	16	5
Douglas	1,114	804	676	194	Reno	642	706	390	155
Edwards	31	30	17	5	Republic	44	77	26	15
Elk	24	42	12	3	Rice	114	123	57	10
Ellis	314	232	172	66	Riley	895	415	728	173
Ellsworth	53	80	30	23	Rooks	67	73	21	14
Finney	621	227	218	54	Rush	23	56	13	7
Ford	576	239	251	101	Russell	84	106	36	8
Franklin	302	256	155	33	Saline	639	558	332	168
Geary	936	198	407	353	Scott	67	52	39	9
Gove	38	24	10	3	Sedgwick	6,732	4,565	2,966	1,426
Graham	24	39	12	6	Seward	381	135	132	69
Grant	126	60	24	16	Shawnee	2,122	2,047	894	267
Gray	78	53	15	8	Sheridan	24	31	16	4
Greeley	14	13	3	2	Sherman	65	70	29	15
Greenwood	54	85	39	13	Smith	30	54	18	9
Hamilton	31	19	8	4	Stafford	44	58	18	11
Harper	69	90	26	9	Stanton	21	24	14	5
Harvey	386	438	243	72	Stevens	72	43	26	20
Haskell	67	33	25	6	Sumner	258	294	139	68
Hodgeman	14	26	10	4	Thomas	99	88	61	27
Jackson	169	139	48	23	Trego	31	41	13	5
Jefferson	188	168	145	25	Wabaunsee	72	79	51	11
Jewell	24	50	22	4	Wallace	34	17	11	3
Johnson	7,133	4,104	2,505	780	Washington	77	79	41	7
Kearny	65	33	32	8	Wichita	22	26	8	4
Kingman	68	105	37	21	Wilson	102	119	38	20
Kiowa	42	24	8	5	Woodson	24	53	14	6
Labette	268	254	94	40	Wyandotte	2,620	1,401	1,173	323
Lane	19	28	6	8	n.s.	4	2	0	0
Leavenworth	1,005	646	491	208					
Lincoln	30	33	6	8					
Linn	102	119	84	31					
Logan	47	37	20	5					

Cigarette Use, Recent Quit Attempts, and E-Cigarette Use Among Kansas Adults with Serious Psychological Distress: Kansas Behavioral Risk Factor Surveillances System, 2017

Background

Tobacco use remains the leading cause of preventable death in the United States. Many diseases have been causally linked to smoking including stroke, blindness, cataracts, age-related macular degeneration, periodontitis, coronary heart disease, pneumonia, atherosclerotic peripheral vascular disease, chronic obstructive pulmonary disease, asthma, diabetes, hip fractures, rheumatoid arthritis, and decreased immune function. In addition, smoking has been causally linked to a multitude of cancers, in organs such as the oropharynx, larynx, esophagus, trachea, bronchus, lung, stomach, liver, pancreas, kidney, cervix, bladder, colon, and rectum.¹

Approximately, one in four U.S. adults have some form of mental illness or substance use disorder. The Substance Abuse and Mental Health Services Administration (SAMHSA) states, “Mental health and substance use disorders affect people from all walks of life and all age groups. These illnesses are common, recurrent, and often serious, but they are treatable and many people do recover.” SAMHSA defines serious mental illness as “someone over 18 having (within the past year) a diagnosable mental, behavior, or emotional disorder that causes serious functional impairment that substantially interferes with or limits one or more major life activities.” SAMHSA states substance use disorders occur “when the recurrent use of alcohol and/or drugs causes clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school, or home.”²

Adults with mental illness or substance use disorder consume nearly 40% of all cigarettes smoked by adults.³ Nicotine has mood-altering effects that put people with mental illness at higher risk for cigarette use and nicotine addiction.⁴ Nationally, in 2016, the use of cigarettes was more common among adults with any mental illness (30.5%) compared to adults without mental illness (18.4%).⁵

To reduce smoking among Kansans with mental illness and substance use disorders, approaches leading to greater coverage and access to evidence-based treatment are needed. In 2016, an inter-agency working group, the Behavioral Health Tobacco Cessation Working Group, comprised of both government and non-government organizations was established to: promote tobacco-free treatment and grounds; expand cessation medication coverage; and increase availability and utilization of tobacco cessation services. With funding from the Kansas Health Foundation, the National Alliance on Mental Illness Kansas chapter (NAMI Kansas) and partners, initiated efforts to reduce smoking among Kansans with mental illness and substance use disorder. Addressing tobacco use among those with behavioral health disorders is a key initiative of the Kansas Tobacco Use Prevention Program (TUPP) and other key partners including the Behavioral Health Tobacco Cessation Working Group, which is comprised

of representatives from TUPP, NAMI Kansas, Kansas Department on Aging and Disability Services (KDADS), health insurance companies, and tobacco researchers.

Objective

The objective of this analysis is to examine the prevalence of current cigarette use, past year quit attempts of cigarettes, and current electronic cigarette (e-cigarette) use among Kansas adults aged 18 years and older with and without serious psychological distress (SPD).

Methods

The 2017 Kansas Behavioral Risk Factor Surveillance System (KS BRFSS) data were used for this report. The KS BRFSS is a population-based random digit dial telephone survey system for assessing and monitoring health of non-institutionalized adults, aged 18 years and older, living in private residences and college housing with landline and/or cell phone service in Kansas. The KS BRFSS uses a split design questionnaire. The core section is asked of all respondents and the survey then splits into two “arms” (version A or version B) consisting of state-selected optional modules and state-added modules. Approximately half of the respondents are randomly assigned to questionnaire version A while the other half are assigned to questionnaire version B. The KS BRFSS provides weighted data representative of the state population. In 2017, the KS BRFSS included a state-added module on the Kessler 6 (K6) on version B of the questionnaire. The K6 is a standardized assessment that has been validated as a measure of non-specific psychological distress. The K6 consists of six questions on depressive and anxiety related symptoms. These six questions are as follows: 1) “About how often during the past 30 days did you feel nervous?”, 2) “During the past 30 days, about how often did you feel hopeless?”, 3) “During the past 30 days, about how often did you feel restless or fidgety?”, 4) “During the past 30 days, about how often did you feel so depressed that nothing could cheer you up?”, 5) “During the past 30 days, about how often did you feel that everything was an effort?”, and 6) “During the past 30 days, about how often did you feel worthless?”. Each response is scored from zero (none of the time) to four (all of the time). The scores for each question are summed to produce a total score ranging from zero to 24. A score of 13 or above is defined as SPD.

Weighted prevalence estimates and 95% confidence intervals were calculated. SAS complex survey procedures were used to calculate the prevalence of cigarette use by SPD, the prevalence of recent quit attempts by SPD, and the prevalence of e-cigarette use by SPD. Logistic regression models were used to compare the prevalence odds of cigarette use by SPD, the prevalence odds of recent quit attempts by SPD, and the prevalence odds of e-cigarette use by SPD while controlling for demographic characteristics, including gender, age, race, and education. All analyses were conducted using SAS 9.4 software.

Results

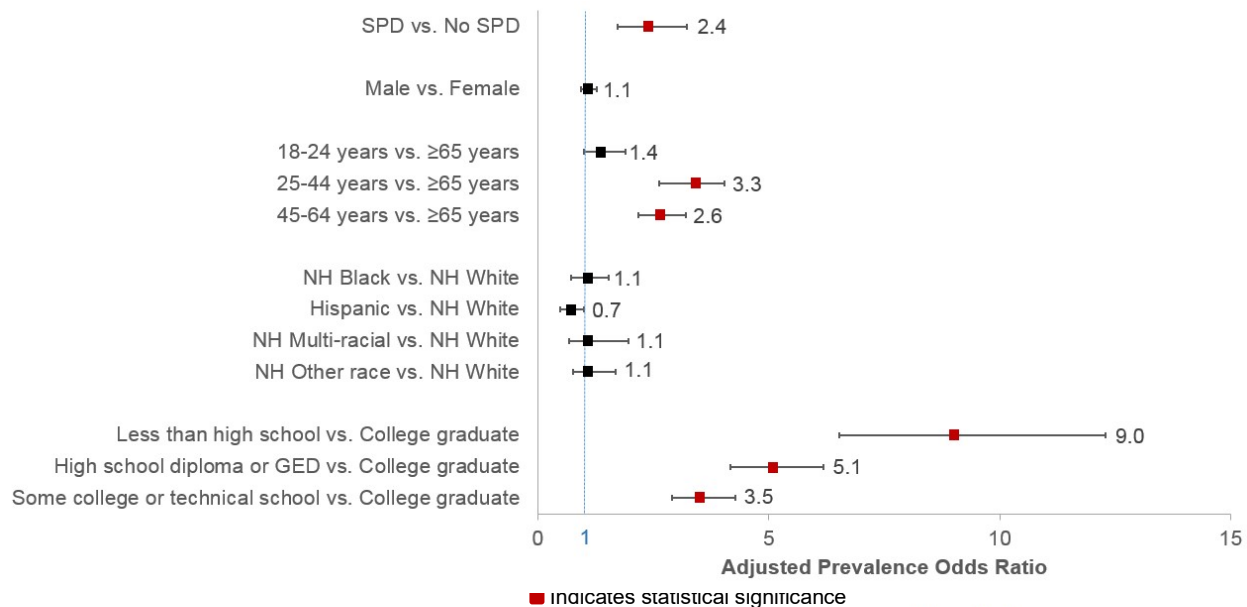
Overall, in 2017, the prevalence of SPD among Kansas adults was 4.4% (95% CI: 3.8% - 5.0%). The prevalence of cigarette use was significantly higher among adults with SPD (38.9%, 95% CI: 32.2% - 45.5%) compared to adults without SPD (16.5%, 95% CI: 15.5% - 17.6%) (Table 1). After controlling for demographic characteristics, the adjusted prevalence odds ratio of cigarette use was still significantly higher among adults with SPD compared to adults without SPD (aPOR = 2.4, 95% CI: 1.7 – 3.2) (Figure 1). Other statistically significant characteristics included: older age (25 – 44 years: aPOR = 3.3, 95% CI: 2.6 – 4.0; 45 – 64 years: aPOR = 2.6, 95% CI: 2.2 – 3.2) compared to those 65 years and older; and lower levels of education (less than high school: aPOR = 9.0, 95% CI: 6.5 – 12.3; high school diploma or GED: aPOR = 5.1, 95% CI: 4.2 – 6.2; some college or technical school: aPOR = 3.5, 95% CI: 2.9 – 4.3) compared to college graduates.

Kansas adults who currently smoke want to quit and more than half attempted to quit within the past year (57.1%, 95% CI: 54.9% - 59.2%). The prevalence of recent quit attempts was not significantly different between adults with SPD (58.2%, 95% CI: 47.2% - 69.3%) and adults without SPD (56.6%, 95% CI: 53.1% - 60.0%). Even after controlling for demographic characteristics, the odds of recent quit attempts were not significantly different (aPOR = 1.2, 95% CI: 0.7 – 1.9) (Figure 2). Only the two younger age groups had significantly lower odds of making a recent quit attempt (18 – 24 years: aPOR = 0.4, 95% CI: 0.2 – 0.7; 25 – 44 years: aPOR = 0.5, 95% CI: 0.3 – 0.7).

The prevalence of e-cigarette use was significantly higher among adults with SPD (13.8%, 95% CI: 8.9% - 18.8%) compared to adults without SPD (4.3%, 95% CI: 3.7% - 4.9%). After controlling for demographic characteristics, the odds of e-cigarette use were still significantly higher among adults with SPD compared to adults without SPD (aPOR = 2.4, 95% CI: 1.6 – 3.8) (Figure 3). Other statistically significant characteristics include being male (aPOR = 1.5, 95% CI: 1.1 – 1.9), under the age of 65 years (18-24 years: aPOR = 10.3, 95% CI: 5.5 – 19.2; 25-44 years: aPOR = 8.6, 95% CI: 4.8 – 15.4; 45-64 years: aPOR = 5.0, 95% CI: 2.8 – 9.0), and lower education levels (less than high school: aPOR = 4.9, 95% CI: 2.8 – 8.5; high school diploma or GED: aPOR = 2.9, 95% CI: 2.0 – 4.3; some college or technical school: aPOR = 2.2, 95% CI: 1.5 – 3.2).

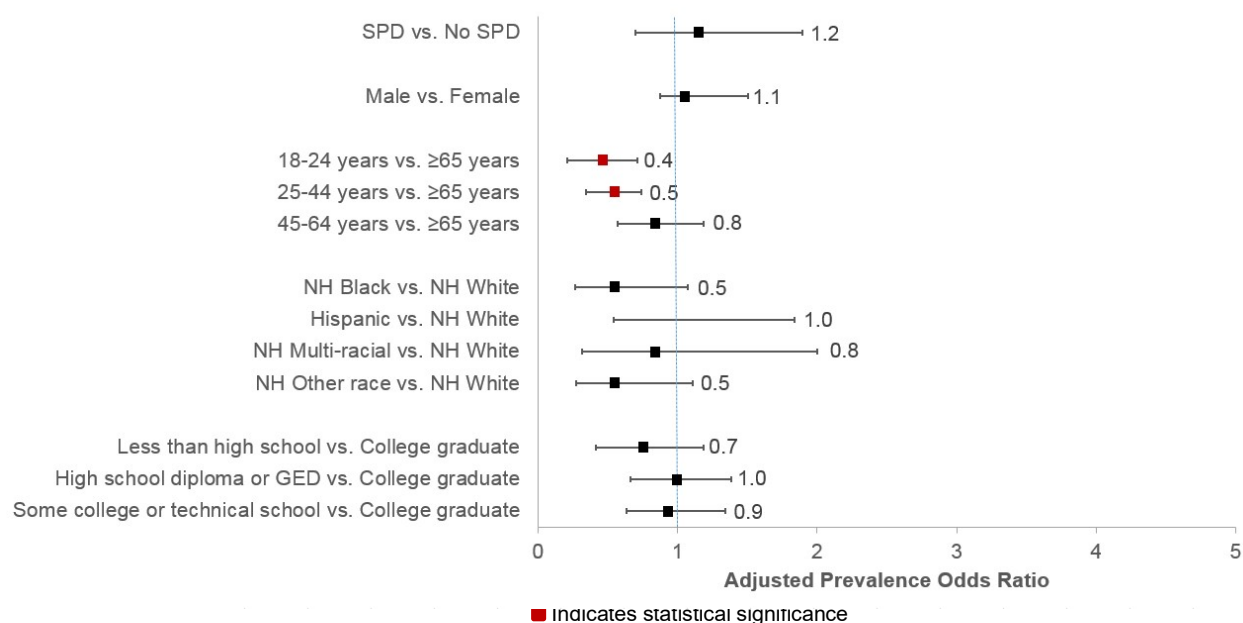
Table 1. Prevalence of selected tobacco indicator among adults aged 18 years and older with and without Serious Psychological Distress (SPD), KS BRFSS, 2017			
	Current Cigarette Use	Recent Quit Attempts	Current E-Cigarette Use
	Weighted Percentage (95% CI)	Weighted Percentage (95% CI)	Weighted Percentage (95% CI)
SPD (K6 score ≥ 13)	38.9 (32.2 – 45.5)	58.2 (47.2 – 69.3)	13.8 (8.9 – 18.8)
No SPD ($0 \leq$ K6 score ≤ 12)	16.5 (15.5 – 17.6)	56.6 (53.1 – 60.0)	4.3 (3.7 – 4.9)
Source: 2017 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE			

Figure 1. Adjusted Prevalence Odds Ratios for Current Cigarette Use by Selected Characteristics, 2017 KS BRFSS



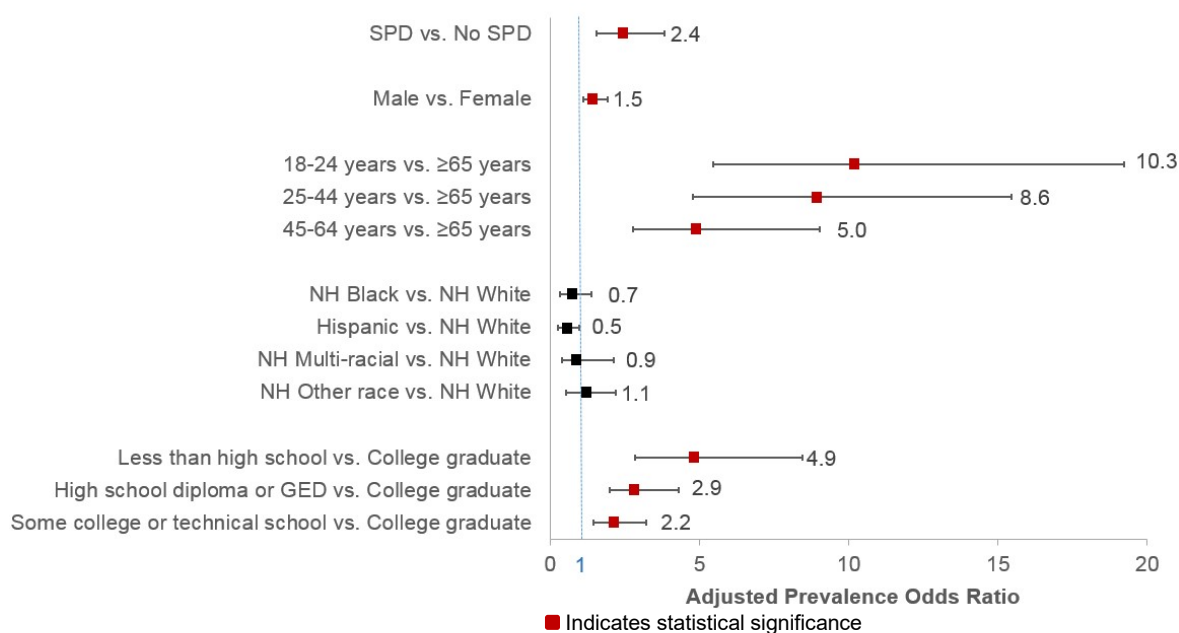
Source: 2017 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE

Figure 2. Adjusted Prevalence Odds Ratios for Recent Quit Attempts by Selected Characteristics, 2017 KS BRFSS



Source: 2017 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE

Figure 3. Adjusted Prevalence Odds Ratios for Current E-Cigarette Use by Selected Characteristics, 2017 KS BRFSS



Source: 2017 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE

Conclusion

In Kansas, conventional cigarette use is significantly higher among adults with SPD compared to adults without SPD; however, individuals with SPD want to quit smoking and attempt to quit smoking at the same rate of those without SPD. E-cigarette use is also significantly higher among adults with SPD compared to adults without SPD in Kansas. This population-based information indicates the need for strategies to promote tobacco-free treatment and grounds, expand tobacco cessation medication coverage, and increase availability and utilization of tobacco cessation services for individuals with SPD.

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Diabetes Mortality in Kansas, 2017

Introduction

Diabetes is a common but serious chronic condition characterized by elevated blood glucose usually due to inadequate secretion of, or resistance to the effect of, insulin. Prolonged elevation of blood glucose damages tissues and organs, and thus, leads to serious complications such as heart disease, stroke, chronic kidney disease, lower-limb amputations, and vision loss [1, 2]. Having diabetes also increases the risk of all-cause mortality by nearly two-fold [3]. Compared to individuals without diabetes, people with diabetes have 3.5 deaths/1,000-person-years higher cardiovascular disease (CVD) mortality and the risk of CVD mortality increases as HbA1c exceeds 7% [4]. Diabetes affects an estimated 30.3 million adults in the United States [2]. Diabetes is also the seventh leading cause of death in 2017 with a national age-adjusted mortality rate of 21.5 per 100,000 people [5]. This report presents the mortality of diabetes in Kansas in 2017. Diabetes mortality is assessed by time trends, socio-demographic characteristics, and comparison of underlying cause of death and contributing cause of death.

Methods

2010-2017 Kansas Vital Statistics

Death Registration data from the Kansas Department of Health and Environment's (KDHE) Center for Health and Environmental Statistics was analyzed to assess diabetes mortality as both underlying and contributing cause of death. Underlying cause of death is defined as the disease or injury that initiated the chain of events leading directly to death. Contributing cause of death is defined as other significant conditions contributing to death but not resulting in the underlying cause. The *International Classification of Diseases, 10th Revision* (ICD-10) code was used to categorize causes: diabetes (E10-E14), cardiovascular diseases (I00-I78), and malignant neoplasms (C00-C97).

Age-adjusted Mortality Rate Calculation

Population denominators were taken from bridged race post-censal estimates produced by the U.S. Census Bureau. 2011-2017 mid-year population estimates produced each year were used rather than the most recent estimates: for 2015, the 2015 vintage population estimate was used rather than 2017 vintage population estimate of 2015. For 2010, census 2010 population was used. The mortality rates were adjusted to U.S. 2000 standard population using direct method based on 10 age groups: 0 to 4, 5 to 14, 15 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 to 74, 75 to 84, and 85 years and older.

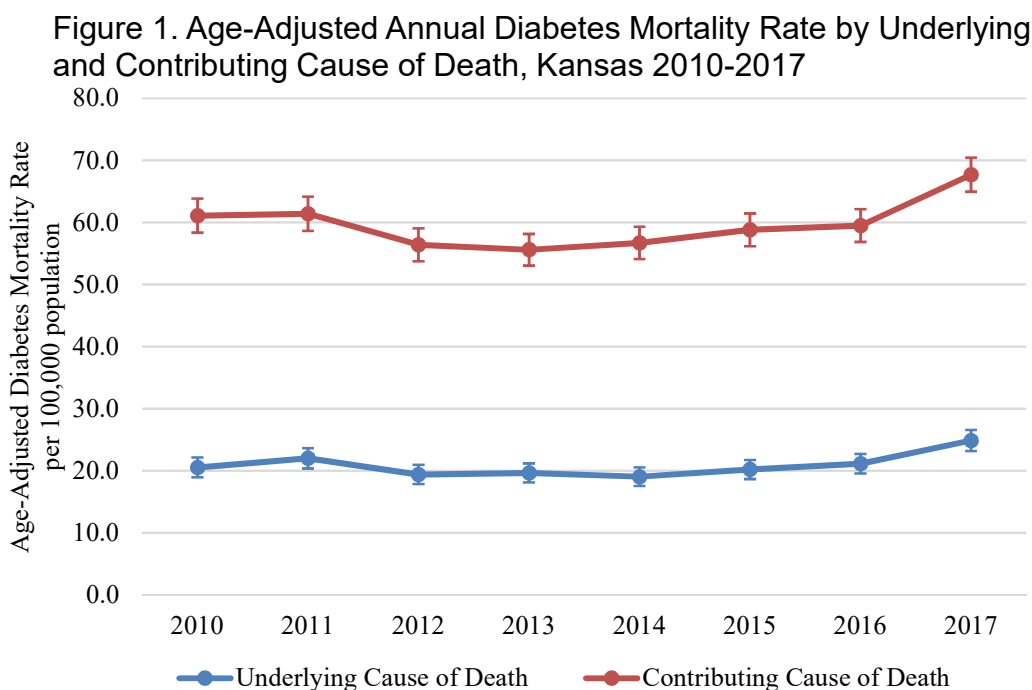
Annual age-adjusted mortality rate from 2010 to 2017 and five-year (2013-2017) age-adjusted mortality rates by gender, race/ethnicity, and five-category county of residence population density peer groups with 95 percent confidence intervals (95% CI) were calculated using PROC STD RATE procedure in SAS 9.4. Statistically significant

differences in mortality rate across different sub-populations were determined by non-overlapping 95% CIs.

Results

Time Trends

Diabetes is the seventh leading cause of death in Kansas, accounting for 864 deaths in 2017. The age-adjusted diabetes mortality rate for diabetes as the underlying cause of death has increased significantly from 20.5 deaths per 100,000 people in 2010 to 24.9 deaths per 100,000 people in 2017 (Figure 1). To fully characterize the impact of diabetes on mortality, it is important to consider death from other diseases such as cardiovascular diseases where diabetes may have contributed to the deaths. Diabetes is listed as the contributing cause of death for about 2,377 deaths in 2017. During the period of 2010 to 2017, a similar trend of significant increase in age-adjusted diabetes mortality rate has been observed when using contributing cause of death (2010: 61.1 per 100,000 people; 2017: 67.7 per 100,000 people).



Source: 2010-2017 Kansas Vital Statistics, Center for Health and Environmental Statistics, KDHE. Rates were age adjusted to the U.S. 2000 standard population using direct method. Diabetes was defined as ICD-10 codes E10-E14.

Five-Year Mortality by Socio-Demographic Factors

Table 1 shows the five-year age-adjusted mortality rates for diabetes for the years 2013-2017 by socio-demographic characteristics. The five-year age-adjusted diabetes mortality rate in Kansas is 21.0 per 100,000 people using underlying cause of death. The age-adjusted mortality rates are 1.5 times higher among men (25.6 per 100,000 people; 95% CI: 24.5 to 26.8) as compared to women (17.2 per 100,000 people; 95%

CI: 16.4 to 18.1). The age-adjusted mortality rates are also significantly higher among non-Hispanic Blacks (44.8 per 100,000 people; 95% CI: 39.8 to 49.9) and Hispanics (24.2 per 100,000 people; 95% CI: 20.2 to 28.1) as compared to non-Hispanic Whites (19.1 per 100,000 people; 95% CI: 18.4 to 19.8). There are modest differences in age-adjusted diabetes mortality rates by county of residence population density peer groups. The age-adjusted mortality rate is significantly lower in urban counties as compared to frontier, rural, densely-settled rural, and semi-urban counties. Similar trends for gender, race/ethnicity, and county population density peer groups are observed when using contributing cause of death.

Table 1. Five-Year Age-Adjusted Diabetes Mortality Rate by Socio-Demographic Factors, Kansas 2013-2017

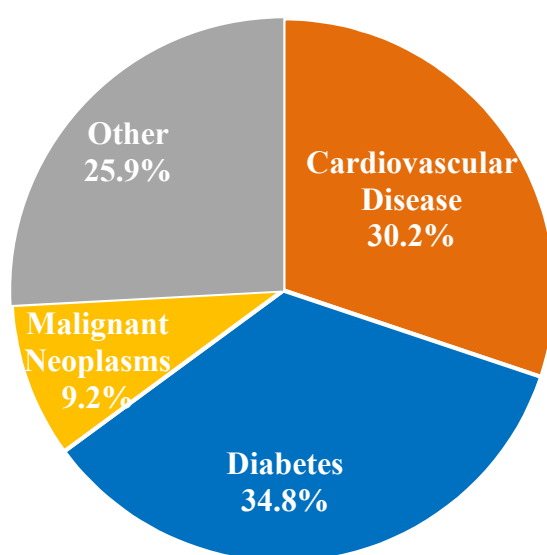
Factor	Diabetes as Underlying Cause of Death		Diabetes as Contributing Cause of Death	
	Rate (per 100,000 population)	95% Confidence Interval	Rate (per 100,000 population)	95% Confidence Interval
Overall	21.0	20.3-21.7	59.7	58.6-60.9
Gender				
Female	17.2	16.4-18.1	47.9	46.5-49.4
Male	25.6	24.5-26.8	74.9	72.9-76.9
Race/ Ethnicity				
White, non-Hispanic	19.1	18.4-19.8	55.3	54.1-56.5
Black, non-Hispanic	44.8	39.8-49.9	104.2	96.4-112.0
Other, non-Hispanic	22.7	17.3-28.0	62.5	53.5-71.4
Hispanic	24.2	20.2-28.1	69.2	62.3-76.0
County of Residence Population Density Peer Group				
Frontier	25.2	21.7-28.7	70.7	65.1-76.3
Rural	23.0	20.7-25.4	63.4	59.6-67.2
Densely-settled rural	24.4	22.6-26.3	66.5	63.5-69.5
Semi-urban	22.6	20.7-24.4	69.7	66.5-73.0
Urban	18.6	17.6-19.5	52.1	50.6-53.7

Source: 2013-2017 Kansas Vital Statistics, Center for Health and Environmental Statistics, KDHE. Rates were age adjusted to the U.S. 2000 standard population using direct method. Diabetes was defined as ICD-10 codes E10-E14.

Diabetes Related-Death by Underlying Cause of Death

During the period of 2013 to 2017, 10,198 death certificates list diabetes as a contributing cause of death. Among those, 34.8 percent (3,546 deaths) also list diabetes as the underlying cause of death (Figure 2). Deaths from cardiovascular diseases (includes heart disease, stroke and other disease of heart or circulatory system) and cancer account for about 30.2 percent and 9.2 percent of all diabetes-related deaths, respectively.

Figure 2. Underlying Cause of Death where Diabetes is Listed as a Contributing Cause of Death, Kansas 2013-2017



Source: 2013-2017 Kansas Vital Statistics, Center for Health and Environmental Statistics, KDHE. For this chart, the following ICD-10 codes were used to categorize underlying cause of death: diabetes (E10-E14), cardiovascular diseases (I00-I78), and malignant neoplasms (C00-C97).

Conclusion

The age-adjusted diabetes mortality rate in Kansas increased from 2010 to 2017. The five-year age-adjusted diabetes mortality rates are significantly higher among men compared to women; non-Hispanic Blacks and Hispanics compared to non-Hispanic Whites; and people residing in non-urban population density counties in Kansas as compared people residing in urban counties. Using both underlying cause of death and contributing cause of death depicts a much more comprehensive picture of diabetes mortality in Kansas. These findings reveal the need for public health strategies that address issues related to rising diabetes mortality and that tailor interventions towards vulnerable sub-populations in Kansas.

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Updates & Announcements

Kansas Information for Communities Birth Module Updated

The Kansas Information for Communities (KIC) System's "Birth Module" has been updated with CY2018 birth data. The module allows users to query birth information ranging from 1995 to 2018 on a multitude of subjects and filter criteria. For instance, the number of singular births and multiple births, age of mother at time of birth, birth weights can be obtained. Statistics can also be broken out by race, ethnicity, county, regional group, and the state.

This query tool can be found at the following link, <http://kic.kdheks.gov/>. Click on the "Birth Statistics" icon on the home page. While visiting the site check out the other modules, fast stats, and resources made available by the system.

Bureau of Epidemiology and Public Health Informatics

Kansas Health Matters Updated

The Bureau of Epidemiology and Public Health Informatics has updated Kansas Health Matters (KHM) indicators, while its site hosting partner, Conduent, has added updated information and is enhancing the KHM maps

The following is a list of newly updated indicators on Kansas Health Matters staging website. The new measures include:

- Colorectal Cancer Rate
- Female Breast Cancer Rate
- Lung & Bronchus Cancer Rate
- Male Prostate Cancer Rate
- Percentage of Screened 3-12 Grade Students w/No Dental Sealants
- Percentage of Screened K-12 Grade Students w/Obvious Dental Decay

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